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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,709	07/15/2003	Jun Funakoshi	108066-00090	4930

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ARENT FOX PLLC
1050 CONNECTICUT AVENUE, N.W.
SUITE 400
WASHINGTON, DC 20036

EXAMINER	
YODER III, CHRISS S	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/618,709	FUNAKOSHI ET AL.	
	Examiner	Art Unit	
	Chriss S. Yoder, III	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (US Patent # 6,456,326) in view of Anderson et al. (US Patent # 6,498,623).

2. In regard to claim 1, note Fossum discloses an image sensor for capturing images, comprising a pixel array where pixels having photoelectric conversion elements are arranged in a matrix (column 4, lines 28-30 and figure 3: 300), a plurality of row select lines which are arranged in a row direction in said pixel array (column 3, lines 1-6 and figure 1: RS), a plurality of column lines which are arranged in a column direction in said pixel array (column 3, lines 7-13 and figure 1: 116), a sample hold circuit disposed in each one of said column lines (column 3, lines 7-23 and figure 1: COL CKT), a vertical scan circuit for generating vertical scan signals to sequentially select said plurality of row select lines (column 4, lines 31-40), and a horizontal scan circuit for generating horizontal scan signals to sequentially select an output of said sample hold circuit (column 4, lines 31-40), wherein said vertical scan circuit sequentially selects and scans said plurality

of row select lines within a first vertical scan period when said image sensor is controlled to a first frame period (column 4, lines 31-40).

Therefore, it can be seen that the Fossum device fails to also sequentially select and scan said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame period. In analogous art, Anderson discloses the use of an image sensor that has multiple frame lengths (column 4, lines 25-28) wherein, the plurality of rows are scanned within a first vertical period even when the image sensor is controlled to a second frame period, which is longer than a first frame period (column 7, lines 56-67). Anderson teaches that scanning the plurality of rows within a first vertical period even when the image sensor is controlled to a second frame period, which is longer than a first frame period is preferred in order to correct for image brightness (column 2, lines 31-42). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Fossum device to include the use sequential selection and scanning of said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame period, as suggested by Anderson.

3. In regard to claim 2, note Fossum discloses that said horizontal scan circuit generates said horizontal scan signals while said vertical scan circuit selects each one of said row select lines (column 5, lines 42-60 and figure 6), and Anderson discloses that transfer signals are not output after said first transfer period in said frame period has elapsed (column 9, lines 40-45, the

transfer period of Anderson is considered to be the period during which Fossum outputs the vertical scan and horizontal scan signals, in other words, neither of scan signals are output after the image is transferred).

4. In regard to claim 3, note Fossum discloses that said pixel comprises a photoelectric conversion element , a reset transistor, a source follower transistor, and a selecting transistor which is controlled by said row select lines (column 3, lines 1-14 and figure 1: PG, RST, RS, and TX).

5. In regard to claim 4, note Anderson discloses that said first vertical scan period is a period which is a part of said first frame period (column 7, lines 56-67 and figure 8: Xsub; the length of Xsub is considered the scan period, which is an independent variable and can remain constant, therefore, the overall length of the frame is variable).

6. In regard to claim 5, note Fossum discloses an image sensor for capturing images, comprising a pixel array where pixels having photoelectric conversion elements are arranged in a matrix (column 4, lines 28-30 and figure 3: 300), a plurality of row select lines which are arranged in a row direction in said pixel array (column 3, lines 1-6 and figure 1: RS), a plurality of column lines which are arranged in a column direction in said pixel array (column 3, lines 7-13 and figure 1: 116), a sample hold circuit disposed in each one of said column lines for sample holding photoelectric conversion signals of said pixels (column 3, lines 7-23 and figure 1: COL CKT), a vertical scan circuit for generating vertical scan signals to sequentially select said plurality of row select lines (column 4, lines 31-40), and a horizontal scan circuit for generating horizontal scan signals to

sequentially select an output of said sample hold circuit while each one of said row select lines is selected (column 4, lines 31-40), wherein said vertical scan circuit sequentially selects and scans said plurality of row select lines within a first vertical scan period when said image sensor is controlled to a first frame period (column 4, lines 31-40).

Therefore, it can be seen that the Fossum device fails to also sequentially select and scan said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame period. In analogous art, Anderson discloses the use of an image sensor that has multiple frame lengths (column 4, lines 25-28) wherein, the plurality of rows are scanned within a first vertical period even when the image sensor is controlled to a second frame period, which is longer than a first frame period (column 7, lines 56-67). Anderson teaches that scanning the plurality of rows within a first vertical period even when the image sensor is controlled to a second frame period, which is longer than a first frame period is preferred in order to correct for image brightness (column 2, lines 31-42). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Fossum device to include the use sequential selection and scanning of said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame period, as suggested by Anderson.

7. In regard to claim 6, note Anderson discloses that the transfer signal is not output after said first transfer period in said frame period has elapsed (column 9,

lines 40-45, the transfer period of Anderson is considered to be the period during which Fossum outputs the vertical scan signals, in other words, the vertical scan signal is not output after the image is transferred).

8. In regard to claim 7, note Fossum discloses an image sensor for capturing images, comprising a pixel array where pixels having photoelectric conversion elements are arranged in a matrix (column 4, lines 28-30 and figure 3: 300), a plurality of row select lines which are arranged in a row direction in said pixel array (column 3, lines 1-6 and figure 1: RS), a plurality of column lines which are arranged in a column direction in said pixel array (column 3, lines 7-13 and figure 1: 116), a sample hold circuit disposed in each one of said column lines for sample holding photoelectric conversion signals of said pixels (column 3, lines 7-23 and figure 1: COL CKT), a vertical scan circuit for generating vertical scan signals to sequentially select said plurality of row select lines (column 4, lines 31-40), and a horizontal scan circuit for generating horizontal scan signals to sequentially select the output of said sample hold circuit while each one of said row select lines is selected (column 4, lines 31-40), wherein said vertical scan circuit sequentially selects and scans said plurality of row select lines within a vertical scan period when said image sensor is controlled to a first frame period (column 4, lines 31-40).

Therefore, it can be seen that Fossum fails to explicitly disclose that the vertical scan circuit does not select said row select lines outside said vertical scan period in said frame period. In analogous art, Anderson discloses that the transfer signal is not output after said first transfer period in said frame period has

elapsed (column 9, lines 40-45, the transfer period of Anderson is considered to be the period during which Fossum outputs the vertical scan signals, in other words, the vertical scan signal is not output after the image is transferred). Anderson teaches that not scanning the plurality of rows outside said vertical scan period in said frame period is preferred in order to allow for a variable frame length and correct for image brightness (column 2, lines 31-42). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Fossum device so that the vertical scan circuit does not select said row select lines outside said vertical scan period in said frame period in order to allow for a variable frame length and correct for image brightness, as suggested by Anderson.

9. In regard to claim 8, note the primary reference of Fossum in view of Anderson discloses the use of an image sensor for capturing images, as claimed in claims 1, 5, and 7 above. Therefore, it can be seen that the primary device lacks the use of a line buffer for storing one row of output of said sample hold circuit, and an image processor for inputting an output of said line buffer, wherein in the horizontal scan period, an output signal of said sample hold circuit is stored in said line buffer responding to said horizontal scan signal, and said output signal in said line buffer is output to said image processor responding to an output clock with a cycle longer than said horizontal scan signal.

Official Notice is taken that the concepts and advantages of using a line buffer for storing one row of output of said sample hold circuit, and an image processor for inputting an output of said line buffer, wherein in the horizontal

scan period, an output signal of said sample hold circuit is stored in said line buffer responding to said horizontal scan signal, and said output signal in said line buffer is output to said image processor responding to an output clock with a cycle longer than said horizontal scan signal are notoriously well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device of Fossum in view of Anderson to include the use of a line buffer for storing one row of output of said sample hold circuit, and an image processor for inputting an output of said line buffer, wherein in the horizontal scan period, an output signal of said sample hold circuit is stored in said line buffer responding to said horizontal scan signal, and said output signal in said line buffer is output to said image processor responding to an output clock with a cycle longer than said horizontal scan signal in order to output the image as it is captured in order to provide real time image processing and storage for live view generation or playback at a later time.

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (US Patent # 6,456,326) in view of Anderson et al. (US Patent # 6,498,623).

11. In regard to claim 9, note Fossum discloses an image sensor for capturing images, comprising a pixel array where pixels having photoelectric conversion elements are arranged in a matrix (column 4, lines 28-30 and figure 3: 300), a plurality of row select lines which are arranged in a row direction in said pixel array (column 3, lines 1-6 and figure 1: RS), a plurality of column lines which are

arranged in a column direction in said pixel array (column 3, lines 7-13 and figure 1: 116), a sample hold circuit disposed in each one of said column lines for sample holding photoelectric conversion signals of said pixels (column 3, lines 7-23 and figure 1: COL CKT), a vertical scan circuit for generating vertical scan signals to sequentially select said plurality of row select lines (column 4, lines 31-40), and a horizontal scan circuit for generating horizontal scan signals to sequentially select the output of said sample hold circuit while each one of said row select lines is selected (column 4, lines 31-40).

Therefore, it can be seen that the Fossum device lacks the use of a line buffer for storing one row of output of said sample hold circuit, and an image processor for inputting an output of said line buffer, wherein in the horizontal scan period, an output signal of said sample hold circuit is stored in said line buffer responding to said horizontal scan signal, and said output signal in said line buffer is output to said image processor responding to an output clock with a cycle longer than said horizontal scan signal.

Official Notice is taken that the concepts and advantages of using a line buffer for storing one row of output of said sample hold circuit, and an image processor for inputting an output of said line buffer, wherein in the horizontal scan period, an output signal of said sample hold circuit is stored in said line buffer responding to said horizontal scan signal, and said output signal in said line buffer is output to said image processor responding to an output clock with a cycle longer than said horizontal scan signal are notoriously well known and expected in the art. Therefore, it would have been obvious to one of ordinary

skill in the art to modify the Fossum device to include the use of a line buffer for storing one row of output of said sample hold circuit, and an image processor for inputting an output of said line buffer, wherein in the horizontal scan period, an output signal of said sample hold circuit is stored in said line buffer responding to said horizontal scan signal, and said output signal in said line buffer is output to said image processor responding to an output clock with a cycle longer than said horizontal scan signal in order to output the image as it is captured in order to provide real time image processing and storage for live view generation or playback at a later time.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US006614477B1: note the use of a variable rate imaging device.

US005144444A: note the use of a variable rate imaging device.

US006580457B1: note the use of a variable frame rate imaging device.

US 20020113886A1: note the use of the readout of an imaging device.

US006486503B1: note the use of an imaging device with electronic shuttering.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CSY
November 8, 2006

VIVEK SRIVASTAVA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600